

San Juan National Historic Site Mobility Study



The National Park Foundation in conjunction with the National Park Service
San Juan National Historic Site, Old San Juan, Puerto Rico
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by Thomas M. Barron
University of California at Davis
(415) 939-3911
tmbarron@ucdavis.edu

Abstract

The San Juan National Historic Site (SJNHS) comprises Spanish military fortifications, including forts, walls, bastions, and esplanade, originally built as a defensive stronghold and gateway to the Americas in the 16th century. SJNHS' small size of 75 acres combined with over 1.2 million annual visitors creates unique transportation planning challenges. Two of the forts, San Cristóbal and San Felipe del Morro (El Morro), are focal points of visitorship and geographically saddle the historic city of Old San Juan. The fortifications support active visitorship from tourists, especially from the cruise ship industry. Over half of the fortification's visitors arrive via the several cruise lines that use San Juan both as a destination and a port-of-call to refuel and resupply. Due to the location of the forts in a dense urban setting, local residents use the grassy grounds of the historic site as premium open space to picnic, relax, and fly kites. The streets of Old San Juan, originally built to support pedestrians and horse-drawn carriages, now experience the after-effects of dense urban commerce — incredible roadway congestion, road wear from heavy trucks and buses, extremely limited parking, and pedestrian traffic.

From a visitor's perspective, the distances between major attractions (the two forts, various cathedrals, and merchant districts) appear quite short on a map. Nonetheless, tropical weather, limited shade, hilly terrain, and various forms of traffic can turn a day of vacation or recreation into a grueling and tiresome event.

The SJNHS has been successful at improving visitor experience and mobility through such projects as the building of El Paseo, a pedestrian path along the fortifications and bay of San Juan and by removing an obtrusive parking lot and service road from the Esplanade, the grassy field leading to El Morro. By expanding similar efforts and introducing new creative mobility solutions, SJNHS will enhance visitor experience, lessen environmental impacts, and become a greater asset to the city of Old San Juan.

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0. Preface

This research has been conducted under the National Park Transportation Scholars program. The program is made possible by a grant from the National Park Foundation, which is funded, in part, by the Ford Motor Company.

Transportation Scholars are placed in National Parks whom have requested assistance on transportation related projects, with the goal of:

... supporting and promoting sustainable transportation solutions that help preserve park resources and, at the same time, enhancing the visitor experience (National Park Foundation, 2004).

To learn more about the National Parks Transportation Scholars Program, please visit:

http://www.nationalparks.org/proudparkers/partner_ford_sch.shtml

1. Background/Purpose — Mobility Study

In the past four years, two transportation studies have been conducted on the San Juan National Historic Site (SJNHS): a Federal Lands Alternative Transportation Systems Study Field Report, conducted by the Federal Transit Authority (FTA) in 2000, and a Transportation System Analysis, conducted by J.J. Sosa & Associates in 2001. This mobility study is an attempt to update and append these two documents and provide recommendations for mobility solutions for the National Park Service, and in some cases, the larger area of Old San Juan.

The Field Report conducted by the FTA provides a concise overview of the SJNHS and underscores mobility issues that continue today, including:

- gridlock,
- parking scarcity, and
- inhospitable tropical weather.

The FTA further describes the two bus transit systems in Old San Juan — the Metropolitan Bus Authority (MBA) and the in-town *Trolley* — as sporadic and generally unreliable. Specifically for the SJNHS, the FTA suggests a shuttle between the two forts and a tram between the turnabout and the entrance of El Morro.

The more comprehensive Transportation System Analysis accurately depicts the challenges in Old San Juan:

The streets of Old San Juan were designed for the 16th century for horse and buggy and pedestrian traffic and not the current heavy-duty vehicular traffic. As a result, the overall condition of the transportation system in the Old San Juan area is as follows:

- Narrow lane widths and small curve radii, common at most intersections, and inadequate for modern vehicular traffic;
- Narrow sidewalks;

- Narrow clear walkway widths;
- Large variations in surfacing materials;
- Poor pavement conditions;
- General non-compliance with the Americans with Disabilities Act (ADA); and
- A total vehicular parking capacity in Old San Juan of approximately 4,470.

These conditions, combined with the heavy current user demands on the infrastructure of Old San Juan, have resulted in two, classic transportation problems:

- I. Inadequate Parking Capacity, and
- II. Traffic Congestion.

As a result of these problems private vehicles, trolleys, service trucks, tour buses, taxis, and pedestrians are scuffling for space on the streets and sidewalks. These conditions are manifested as follows:

- Peak parking demand exceeds capacity by 560 vehicles;
- Extensive periods during which vehicles travel in search of parking spaces;
- Non-compliance with parking signs and curb markings;
- Pedestrian use of roadways to avoid obstacles on sidewalks;
- Frequent and recurrent conflict between pedestrians and vehicles; and
- Inadequate emergency vehicle response, including police, fire and ambulance (Sosa, 2001).

The Transit System Analysis echoes the sentiments of the FTA, especially with their primary suggested alternatives:

...On-site Alternative No. 1, which consists of a pathway between the two forts adjacent to the old city wall next to Calle Norzagaray; an open-air, propane-powered, tram with one or two trailers attached; and associated infrastructure...

...On-site Alternative No. 2, which consists of a[n] electric-powered trams and trailers associated infrastructure, including the loading and unloading areas at each end of Trace Road (Calle del Morro) to accommodate the shuttle and roadway surface improvements...(Sosa, 2001).

The FTA and J.J. Sosa and Associates (Sosa) correctly diagnose the mobility challenges in Old San Juan and between the two historic forts. The proposed solutions are viable. Nevertheless, in the past four years, the current context of the historic site, increased visitorship, and new developments by the municipality beg additional evaluation. Further evaluation of Sosa's solutions and examination of other alternatives will promote the most robust solution. A sample of incremental methodologies and alternative approaches to the SOSA and the FTA's proposed solutions (to be further discussed in this report), include:

Alternative No. 1

- Currently, there is no infrastructure for propane or any other alternative fuel in Old San Juan. Infrastructure and transportation costs would be expensive, as well as creating additional congestion. The only feasible alternative transportation energy source is electricity, due to its ubiquity, price stability, and existing infrastructure.
- Although the path along Norzagaray would improve access and transit time between the forts, an extension of the existing Paseo del Morro, with various alternative routes, should be evaluated. These alternative routes may improve interpretative opportunities, lessen impact on the resource (especially the fort walls), and improve integration with the community and other attractions in and around Old San Juan.
- Specific reasons for evaluating other routes include the several obstacles along Norzagaray that might make building and operating a tram along this path precarious, including: vest-pocket parks, passive recreators, street vendors, and existing structures such as the entryway to the local parking lot (beneath Museo de las Américas).
- The municipality of Old San Juan is researching lower profile vehicles (such as electric trams) to replace their existing fleet of in-town buses (referred to as the 'Trolley'). If the municipality continues this effort, the historic site may be able to piggy-back on their efforts to reduce the overhead of such a system. Given the compressed budget of the

historic site, such collaboration could help minimize operational and sunk cost concerns regarding maintenance, storage, and asset ownership.

Alternative No. 2

- In the early 1990s, the road connecting the roundabout and the door to El Morro, or Calle del Morro, and the adjacent parking lot were removed. A new permeable surface was created to give small vehicle and wheelchair access to the fort, and the remaining areas were returned to the grassy open space that more accurately depicts why the Spanish built the Esplanade — as an open exposed area without cover — to act as a defense against inland attackers. Now, not only does this area better represent history, it acts as much needed open space for the urban area of Old San Juan. Especially on the weekends, locals use the area to relax, exercise, picnic, and fly kites. Even now, when an administrative cart uses the road, the driver must travel slowly and be constantly aware of pedestrians and children playing along this route. Alternative No. 2 suggests repaving this road and adding a tram. Depending on how this alternative is carried out, negative externalities could result, such as: reduced surface area of rain access to the water table, creation of a transit corridor in an area that is one of the few pedestrian-only areas on the island, devaluation of the historic context, and degradation of the Esplanade experience for local recreators and visitors.
- Given these externalities, Sosa's Alternative No. 2 may still be the preferred alternative to improve general mobility to El Morro and to better comply with the Americans with Disabilities Act (ADA). With this in mind, further examination of alternative routes, again, such as extending *El Paseo*, or simply examining other less-intrusive road structures (such as *grass-crete*) are warranted and desirable.

In a more cursory fashion, Sosa examines two other alternatives, Alternative Nos. 3 & 4, that both involve adding three new local Trolley routes, including a fort-specific, or *Castillos Route*, and others to expedite service through town and to parking. Coincidentally, the municipality has recently expanded service of the Trolley to include the route along Norzagaray between the forts and is looking to improve service by acquiring smaller narrower vehicles.

The remainder of this study further examines the problems stated above in Sosa's Transportation System Analysis in greater depth and, ultimately, poses recommendations to improve mobility between the forts, with respect to addressing the current environment and larger mobility context of Old San Juan.

2. Travel in Old San Juan

The San Juan National Historic Site (SJNHS) preserves the remains of what was, at one time, the entirely walled city of Old San Juan. To better understand the mobility challenges of the site, one must examine the larger issue of travel in Old San Juan. Since a visiting



Photo 1: Townhouses on Calle San Sebastián

pedestrian may experience the city much differently than a local commuter in an automobile, this section approaches travel in Old San Juan by mode. Table 1 offers a quick snapshot of Old San Juan, further supporting claims that it is a premier tourist destination. The table also illustrates how this small town, barely a mile at its widest, can become simply overwhelmed with traffic of all types.

Table 1: Old San Juan Statistics

Geographic area ¹	663 acres
Resident population ²	4,300
Daily employee population ³	3,210
Average daily number of visitors ⁴	11,520
Number of visitors arriving annually ⁵	~2.3 million
Number of visitors arriving by cruise ship ⁶	~1.3 million
Number of cruise ships arriving annually ⁷	626
Parking capacity ⁸	4,470
Peak parking demand and number of spaces lacking ⁹	5,130 or (560)
Number of reserved parking spaces and percent of total ¹⁰	2,650 or 60%
1. Departamento de Urbanismo, 2004, 2, 3, 4. Departamento de Urbanismo, 2000, 5. Sosa, 2001, 6, 7. Zarcone-Perez, 2003, 8, 9, 10. Sosa, 2001	

Pedestrian/non-motorized

Vibrantly colored town houses. Gas lamps. Beautifully restored buildings. Intimate cobblestone streets. 16th century cathedrals. Dramatic views of the Bahía de San Juan outlined by the historic walls of the fortress. Even for the most casual visitor, a stroll down the streets of Old San Juan can become an artifact treasure hunt. During the day, these streets and buildings house bustling businesses and government offices. At night, the city transforms as restaurant tables and local music spill into the streets.

Walking

The romance of the streets of Old San Juan combined with its small size make walking the city an obvious choice. Nevertheless, the same components that make the city appealing also hinder travel on foot.



Photo 2: Plaza Colón

Plaza Colón acts as the gateway to Old San Juan. Lying on the east side, main thoroughfares, bus stops, and the cruise ship piers all generally lead visitors to begin touring the city here. The Plaza, which commemorates the first Spanish expedition to the island lead by Christopher Columbus (Cristóbal Colón), is surrounded by historic buildings and town houses. It is also surrounded by busy roads. Crosswalks are faded. Given drivers' behavior, it would appear that the stop signs are effectively invisible. For pedestrians, there is not a clear safe path to walk either toward the ocean or into the city. Pedestrians must either maneuver their way between vehicles stuck in traffic or carefully cross as cars race their way out of the city.

The natural paths into downtown follow Calle San Francisco and Calle Fortaleza. Looking up, a pedestrian might see beautiful balconies, ironwork, and classic tile street signs. The street signs that have been restored are beautiful and capture the spirit of Old San Juan. Nevertheless, many corners are missing signs and, often, when signs are present, they are faded and illegible.



Photos 3 & 4: Street Signs on Calle la Luna

Many of the narrow streets are in disrepair. The cobblestones, or adoquines, which were originally made from the ballast in Spanish ships, are frequently missing or cracked. The sidewalks are narrower still, and illegally parked vehicles force pedestrians onto the street.

The city is longer than it is wide, so most of the pedestrian and auto traffic travels east and west. The streets themselves would align nearly perfectly on a compass, and thus the buildings offer almost no shade throughout the day. For visitors more accustomed to temperate climates, the strong sun and other weather factors make pedestrian travel in San Juan uninviting, including:

- average daily high temperature of 87° Fahrenheit (Weather Channel, 2004),
- 66% average daily humidity (University of Puerto Rico, 2004),
- 60-80 inches of rain annually, often occurring in powerful tropical storm bursts (Peffer, 2003),
- a steep gradient climbing north from bay to the cliffy coastline, and
- toxic exhaust fumes from idling vehicles stuck in traffic increasing the ambient temperature on the streets.



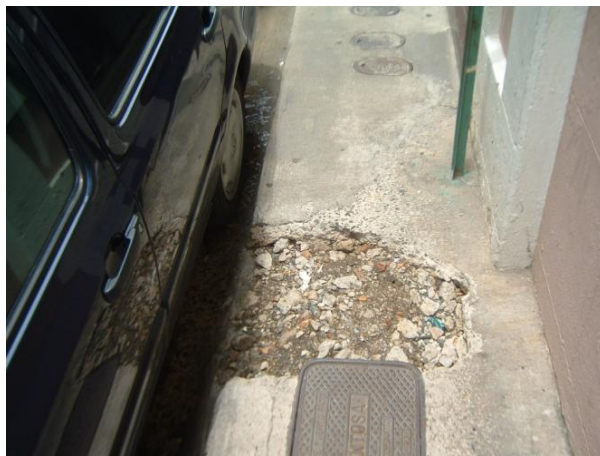
Photo 5: Sidewalk on Calle Tetuán

Bicycling

As a form of transit, bicycling is rare in Old San Juan. The narrow cobblestone streets barely have room for autos. No bike lanes exist, and bicyclists are forced to share the roads with motor vehicles. Sidewalks are not an alternative, due to pedestrian traffic and that many of the sidewalks are not even as wide as a set of bicycle handlebars. Recreational cyclists tend to avoid Old San Juan. There do appear to be a handful of lunch delivery bicycles operating on the busy streets at some peril, as well as a city/fortification tour occasionally offered to tourists via bicycles.

Wheelchairs

Most sidewalks and streets in Old San Juan are not compliant with the Americans with Disabilities Act (ADA). Again, the steepness of the hills, narrowness and disrepair of the streets and sidewalks, and illegally parked cars make it a fairly hostile environment for a wheelchair.



Photos 6 & 7: Streets and Sidewalks on Calle Fortaleza and Calle Tetuán

The municipality is working on improving sidewalks and wheelchair access. Sidewalks which have been modified to become ADA compliant are still often blocked by illegally parked cars and commercial vehicles with few options of where to load/unload.



Photo 8: Commercial Vehicle on Avenida de la Constitución

Mass Transit

The standard forms of transit in and around Old San Juan are: municipal bus, local Trolley, taxis, rental cars, and ferry. Although not conventionally considered mass transit, cruise ships, tour buses, and públicos also serve the city.

Bus

The Autoridad Metropolitana de Autobuses (AMA) provides service within local municipalities for 25¢, and the Metrobus continues service across municipalities for 50¢. Recent improvements

to both services include replacement of older buses with new air conditioned ones and the installation of ‘bus only’ lanes traveling in the reverse direction on major thoroughfares. Nevertheless, many bus stops still do not post schedules or maps of routes.

Trolley

Within Old San Juan, the free Trolley (a bus painted to look like a trolley) runs every 15 minutes. The Trolley’s two routes begin at the cruise ship piers — with one heading straight downtown to Plaza Armas and the other heading along Norzagaray towards El Morro.



Photo 9: Free Downtown Trolley

Although the Trolley runs frequently, it is also frequently stuck in traffic. For speed, pedestrians are usually better off walking (the Trolley moves at the same slow speed as the congested traffic), but the Trolley does act as an effective mobile comfort station, as it is heavily air conditioned and will pick up and drop off passengers just about anywhere along the route. The Departamento de Urbanismo (DU) recently purchased new vehicles (shown in Photo 9) which are narrower and are better able to navigate the narrow streets and illegally parked cars in Old San Juan. The DU is also researching golf cart-like vehicles and has been pilot-testing a Trolley

corridor on certain streets by placing obstacles (such as the planters in Photo 10) to deter illegal parking.



Photo 10: Planters to Deter Illegal Parking on Calle la Luna

Taxi

Ample taxis service the city. Regulations removed meters, and now all destinations have fixed pricing. The lobby for cabdrivers must be quite influential, as the rate for the 6 mile trip to the airport is \$16, plus incremental charges for additional passengers and baggage. Thus, cabs are used mostly by tourists.

Rental Cars

In Old San Juan, rental cars are rare, and the island lacks a single car rental office. Most non-native visitors come via cruise ships and rarely stay longer than one day. Those flying to Puerto Rico and vacationing normally stay in hotels and use taxis or hotel-provided transportation. Surely some must rent cars and use them to explore Old San Juan, but these incidences are rare and likely insignificant from a transit/congestion perspective.

Ferry

A commuter ferry crosses the bay between Old San Juan and Cataño every 30 minutes during the day for 50¢. A bus in Cataño connects the ferry to the Bacardi Rum Factory for tours, but it is used much less often than the tour buses that combine this tour with other destinations.

Cruise Ship

Again, the terms mass transit and cruise ship may appear to be an odd combination, but the cruise lines deliver over 2 million visitors to Old San Juan each year. Cruise ships are the dominant mode for non-native visitors to reach Old San Juan. These visitors then take tours, ride taxis, and walk to explore the city. The cruise lines have tremendous influence on how visitors experience the city



Photo 11: Cruise Ship at Pier 3

through their word-of-mouth advice and in-cabin brochures. Since September 11, 2001, decreases in vacations involving air travel have lead to steady increase in cruise line travel.

Tour Bus

If cruise ships are the dominant mode in which non-native visitors reach Old San Juan, tour buses are the dominant mass transit mode in which they experience the city. Tour buses have a huge impact on local congestion. The size and weight of the vehicles, volume of occupants, inability to navigate the narrow streets, and high likelihood of parking illegally have all made the municipality and local police view the tour companies as a menace. That said, the tour companies are a powerful force, both in their lobbying of the government and influence of the spending habits of visitors. Further discussion on their management is discussed in the next chapter.

Público

Since Puerto Rico does not have an integrated web of bus transit, entrepreneurs run small private vans as jitneys, called públicos, on fixed routes to various destinations throughout the island. Since the públicos are stationed at the edge of Old San Juan and do not tour the interior, they are fairly insignificant as a mode of transit and contributor to congestion. Públicos do have a small impact on pedestrian travel, in that they bring residents of other municipalities to Old San Juan to shop and recreate.

Automobiles

The personal automobile is far and away the mode of choice for locals in Puerto Rico. One might imagine that the narrow streets and winding roads throughout the island would promote small nimble vehicles. This is not the case, and the island is coinciding with the U.S. mainland in the

proliferation of the sports utility vehicle. Due to automobiles, the streets of Old San Juan exceed capacity daily. Sadly, local businesses are not operating at capacity, and the gridlock likely hinders visitors and customers from accessing local storefronts.

Illegal Parking

Illegal parking in Old San Juan has become an epidemic. Scarcity of parking, lack of meters to promote turnover, and inconsistent law enforcement all contribute to this problem. Parking garages charge an initial \$5 for the first hour and top out at about \$20 for an entire day. A parking ticket is \$25, and with low enforcement, it is worth the risk for many drivers. This risk is further mitigated by the added convenience of being able to park immediately next to one's destination. Unoccupied free parking spaces downtown are such an anomaly that derelicts effectively scalp open spots and offer 'protection' of the vehicle. Protection, in this instance, means that the derelict won't vandalize the vehicle if he/she is given a tip.



Photo 12: Congestion and an Illegally Parked Vehicle on Calle San Francisco

Efforts to improve access and mobility in Old San Juan are often thwarted by the impunity of illegal parkers. For example, as the Photo 12 illustrates, corners that have been converted to support handicap access are used as launch ramps to illegally park.

Congestion

The congestion in Puerto Rico is unfathomable. On par with much larger cities like Bangkok, a short 6 mile trip to the airport from Old San Juan could take anywhere from 10 minutes to 1 ½ hours. To illustrate the sheer number of vehicles, an ad hoc study conducted by a local University found 847 vehicles entering Old San Juan during 30 minutes of off-peak midweek travel (Universidad de Sagrada Corazón, 2004). As a casual observer, one gets the impression that the amount of time spent in automobiles motivates drivers to desire newer nicer vehicles, only adding to the total number of vehicles on the island.

The hilltop geography of Old San Juan and northeasterly trade winds keep the local air clean. With emissions from Old San Juan blowing across the bay, it is the neighboring commercial area of Cataño that is forced to deal with the classification of non-attainment air quality levels set by the Environmental Protection Agency. Nonetheless, pedestrians walking amongst dormant idling cars on city streets are forced to inhale pollutants that are further confined by the narrow streets and overhanging townhouses. The street setting previously described as intimate simultaneously poisons pedestrians during peak travel times.

Commercial Vehicles

Many feel that vehicles larger than a passenger van have no place in Old San Juan. Large commercial vehicles frequent the city to collect trash, deliver merchandise, transport schoolchildren, and give tours. Although there has been an ongoing debate about this controversial issue, the weight of these vehicles is taking its toll in Old San Juan. The cobblestones, or adoquines, resilient



Photo 13: Wall Collapse on Norzagaray

to hundreds of years of use, are cracking and breaking under the weight of these heavy vehicles. Further, in March of 2004, a large portion of the wall of the historic fortress collapsed. The collapse of the wall (seen in Photo 13) has re-catalyzed the debate.

Not only do these vehicles exponentially increase the wear and tear on the historic roads, their large turning radii, frequent stops, and illegal parking create havoc and bring the city streets to a halt. The Departamento de Urbanismo is evaluating creative solutions to this problem, such as offering incentives to enterprises that use smaller commercial vehicles.

Conclusion

The purpose of this study is to evaluate mobility issues in the San Juan National Historic Site. These first two chapters serve as background, in that the historic site coexists within the larger city of Old San Juan and shares its transportation planning challenges. Recommendations for the city of Old San Juan to improve its mobility, especially in the context of the fortifications, will be interlaced with suggestions for the historic site in the last chapter.

3. San Juan National Historic Site – Background

As best described by the National Park Service:

San Juan National Historic Site, includes forts, bastions, powder houses, wall and San Juan de la Cruz Fort, also called El Cañuelo, – defensive fortifications that once surrounded the



Photo 14: Garita Santa Barbara

old, colonial portion of San Juan, Puerto Rico. El Cañuelo Fort is located at Isla de Cabras at the western end of the entrance to San Juan Bay. Sections of the massive sandstone walls, dating to the 1630s, remain; so, too, do the San Cristóbal and San Felipe del Morro forts (NPS, 2004).

Over 1.2 million people visit the San Juan National Historic Site (SJNHS) annually. This number is divided between over 700,000 paying visitors and another estimated 400,000 – 500,000 visitors who passively recreate on the site’s grounds, including the Esplanade, El Paseo, and various portions of the city wall. The following table offers a glimpse of what a dominant attraction the SJNHS is, especially considering the small size of Old San Juan.

Table 2: San Juan National Historic Site Statistics

Geographic area ¹	75 acres
Number of Park Service staff ²	70
Number of total visits in 2003 ³	1,252,894
Number of total visits in 1998 ⁴	892,854
Approximate 5 year visitorship increase (1998-2003) ⁵	~40%
1-5. NPS, 2004	

Visitorship of the site has fluctuated over the past decade, but the general trend has been an increase. This is especially true in recent years, given tourists' reluctance to fly since the terrorist attacks on September 11, 2001 and the growth of the cruise line industry bringing visitors to the port of Old San Juan.

The growth in visitorship is one of the main driving factors in conducting this mobility study. For the SJNHS, the locations of the four main mobility challenges are:

- from the city to El Cañuelo,
- between San Cristóbal and San Felipe del Morro,
- across the Esplanade between the roundabout and door of El Morro, and
- the extension of the current path from the San Juan Gate to El Morro – El Paseo.

The next three chapters will focus on these transportation corridors.

4. Old San Juan to San Juan de La Cruz (El Cañuelo)

Description

El Cañuelo is a small fortification across from El Morro on the other side of the entrance to the San Juan Harbor. It was originally built as a wooden structure to compensate for the limited gun range of the cannons at El Morro. After being taken and burned by the Dutch in 1625, it was rebuilt using stone in 1660.



Photo 15: El Cañuelo

The remote location of the small fort and limited access has resulted in low visitorship. The fort sits inside a recreational area administered by the Puerto Rico National Parks Company. Nearby is a picnicking and swimming area, the Bacardi Rum Factory, restaurants, and Isla de Cabra (Goat Island) — a Spanish leper colony established in the 19th century. The outlying area is fairly industrial, and the recreational area next to the ocean is underutilized. This underutilization has led to a state of disrepair of the fort and an abundance of trash on the site.

The Puerto Rico National Parks Company has plans and a completed blueprint to enhance visitor access to the site by adding more parking, picnic tables, gazebos, and an administrative building. These plans could act as a catalyst for the San Juan National Historic Site and El Cañuelo.

Visitorship

Currently, El Cañuelo is not formally visited, other than by passive recreators using the surrounding park and water/bay access for swimming. The General Management Plan, written

in 1984, referred to bay tours offered on Sundays as an alternative means to view El Morro and the surrounding walls (NPS — General Management Plan, 1984). By default, this tour would also have showcased El Cañuelo. This tour has not been in operation for at least a decade.



Photo 16: El Cañuelo from Dock, El Morro in Background

Opportunity/Recommendation

From a visitorship and interpretation perspective, El Cañuelo is a diamond in the ruff. The fort sits along a beautiful coastline, has an existing dock, and offers a historic perspective of El Morro that would have been experienced by seafarers when the forts were in operation. An additional benefit would be for employees. Employees working in fee collection and interpretation experience burn-out while working in the existing two forts, especially when working extended hours at El Morro. At El Morro, interaction with visitors is always outdoors — there is no reprieve from the hot humid weather. The El Cañuelo site would offer a welcome

change, cooler off-shore temperatures, and an opportunity to expand employee knowledge of the fortifications.

The simplest way to improve access to the site would be to connect the small dock at El Cañuelo and the dock administered by the Commonwealth at the San Juan Gate with a ferry. The closest example to this type of service that currently exists within the National Park Service (NPS) is at Fort Matanzas National Monument (Matanzas). At Matanzas, visitors must arrive by private vehicle and then take a 5-minute ferry ride to the fort that sits on an island. The ferry is owned and operated by the NPS. The NPS offers 8 trips a day, departing once an hour (NPS, 2004). Matanzas subsidizes the service through donations. Matanzas is currently considering a new fee structure to include transportation and/or having a concessionaire run the service.



Photo 17: Dock at San Juan Gate

For the San Juan National Historic Site, owning and operating such a service is not an option. Tight budgets and unestablished visitor demand dictate that the site focuses on the larger resources — El Morro and San Cristóbal. That said, partnership opportunities could make the

ferry a reality. The nearby Bacardi Rum Factory could underwrite the initial assets and operational costs as a creative way to offer tours. Currently, the rum factory is serviced by bus tours, and the tours are forced to navigate through the busy and somewhat unsightly industrial area of Cataño.

This service would require partnership with several entities, including:

- National Park Service,
- Bacardi Rum Factory,
- Puerto Rico National Parks Company,
- Commonwealth of Puerto Rico, and
- Puerto Rico Tourism Company.

Joint ventures of this nature are difficult in Puerto Rico given the ever-changing political climate. Nonetheless, the municipality of Old San Juan is receiving pressure from local merchants and cruise lines to enhance the city's offerings to tourists. Giora Israel, from Carnival Carnival Corp. & Plc. (the dominant cruise line with over 50% of market share), emphasizes this point:

As a homeport, Puerto Rico is ideally located, but as a destination, it is not exciting. Tourists need more recreational choices (Zarcone-Perez, 2003).

Merchants agree, as more attractions mean longer stays and more spending in Old San Juan. Tourists in port for just a day trip spend an average of \$12 each. Those staying overnight spend over \$100 (Zarcone-Perez, 2003). Further, the existing plans to improve visitor access to area are a big incentive for the SJNHS and Puerto Rico Tourism Company to work together.

If a concessionaire or Bacardi were to offer a ferry, the area has several assets in addition to El Cañuelo:

- Isla de Cabras (goat island) and the ruins of the leper colony,
- beach and swimming access, and

- local shore side restaurants.

The biggest drawback to the area, and a possible fly in the ointment, is the police shooting range next to Isla de Cabras. The Puerto Rico National Parks Company is negotiating the closure of this range. If shooting times can not be negotiated to occur during non-peak visitorship, the sound of gunfire may disrupt this peaceful setting. The only other immediate concern might be the perception of the cannibalization of riders from the Cataño ferry. This should not be a problem, as this is predominantly a commuter ferry. Further, the Cataño ferry does not highlight or service the fortifications in any way (both the Old San Juan dock and the dock at Cataño lay substantially east of the docks at the San Juan Gate and El Cañuelo).

Next Steps/SJNHS Impact

The immediate next steps would be to meet with the co-venture partners highlighted above, especially Bacardi and the Puerto Rico Tourism Company. Additionally, bus tour operators and cruise lines may offer interesting perspectives. The SJNHS could simply write a request for proposal and allow potential concessionaires to come back with the most compelling plan. The major liabilities for such a service to the SJNHS are:

- repair and maintenance of El Cañuelo,
- possible environmental impact assessment of the ferry (fuel use, water pollution, etc.),
- evaluation of overlap with Cataño ferry,
- investigation of ferry path (right of way),
- completion of the Historic Structures Report for the fort (currently planned),
- concessionaire(s) assessment,
- costs associated with training the concessionaire and/or staffing ferries with an interpreter (although this would be mitigated by concessionaire fees), and
- labor hours to manage alliances and write/implement the project plan.

This overhead appears to be worthwhile, considering the benefits of additional preservation, visitorship, and interpretation of the site.

5. Travel between the two forts: San Cristóbal and El Morro

The two forts, San Cristóbal and El Morro, are the main attractions to the San Juan National Historic Site (SJNHS). Both forts offer visitors direct access to such treasures as: panoramic views of the Atlantic Ocean, 400 year-old walls, and authentic cannons. Over 700,000 visitors pay to visit the forts annually, and roughly half of this number arrives in Old San Juan via cruise ships. Another uncounted number do not pay but still visit the exterior of the forts, recreate on the Esplanade, walk El Paseo, and/or visit the unstaffed bastions and walls. A formula estimates this uncounted number to be roughly 400,000 visits per year. Even a casual observer would see that this number begs recalibration; the size of the fortifications and sheer number of visitors would put a better guess at over a million passive visitors annually.



Photo 18: El Morro Guarding the Entry into the Bay of San Juan

Geographically, the two forts sit 50-100 feet above sea level, lie approximately one mile apart, and frame the northern border of the city of Old San Juan. The most efficient way to describe visitor travel experience is to examine each mobility component by mode.

Pedestrians/non-motorized

Of the roughly 700,000 paying visitors, 100,000 (about 15%) pay to visit both forts, and again, another countless number of unpaid visitors follow the same path along the walled corridor between the forts. Due to parking and proximity to downtown, the more common and logical starting point is San Cristóbal. Further, choosing either fort as a starting point is immaterial, as there is only one standard corridor (via Norzagaray) along the route.

Entering through the main SJNHS entrance on Calle Muñoz Rivera (building 213), a visitor would travel through the fort, exit through the only other entrance/exit on Norzagaray street at the northeast corner, continue along the coastline on Norzagaray for $\frac{3}{4}$ of a mile, and finally turn onto Calle del Morro for the last $\frac{1}{4}$ of a mile along the Esplanade — ultimately reaching the door of El Morro. The entire trip is roughly one mile, along an open coastline, and punctuated by fort bastions and renovated historic buildings. The current pedestrian path between the forts is highlighted in yellow on Map 1.



Map 1: Old San Juan and Pedestrian Path between El Morro and San Cristóbal

For visitors that arrive at the forts in good physical condition, walking is an excellent mode for touring. Sidewalks are broad, the city is restoring historic structures along the route, and the Esplanade leading to El Morro offers beautiful open space and an excellent depiction of what the Spanish had intended for the area — an indefensible exposed field, making it difficult for intruders to establish a foothold. Unlike the streets of the inner part of the city, bicycling is an excellent option on this route. A few of the tour companies offer bicycle tours which include the fort. Bicycle racks are not available at either fort, and the tour companies must leave one of the guides with the bicycles to protect them against theft. Given that a vast majority of visitors come via cruise ships from more temperate climates and visit the forts during the hottest part of the day, many find the rolling hills and the sun exposure on this walk physically taxing. More specifically, the areas along this corridor that need to be addressed to improve pedestrian mobility are, lack of:

- shade from the sun or protection from rain,
- obvious signs indicating directions and distances,
- drinking fountains or vendors offering cold beverages,
- bicycle racks,
- signs offering interpretation (effectively entertainment along the route),
- signs delineating trolley stops as an alternative to walking,
- National Park Service personnel walking the corridor to answer questions and offer general visibility,



Photo 19: Norzagaray Street—Sidewalk Leading to Calle del Morro

- a National Park Service produced walking tour of the forts offering distances, climate conditions, and interpretive information which would offset the scarcity of interpretive personnel,
- the same interpretive and walking tour information on a website for pre-trip planning,
- a clear alternative route through the streets of Old San Juan,
- access to the ocean,
- a delineation between Old San Juan and the neighboring community of La Perla – just down a single flight of steps — notorious for drug traffic and other criminal activity, and
- clear options for the visitor who would prefer not to take a package tour.

Alternative routes and local trolley service are discussed later in this section, as well as a more comprehensive discussion on recommendations. For pedestrians, a few low-hanging-fruit suggestions to improve mobility are:

- Install unobtrusive signs indicating:
 - Interpretation of the walls & bastions
 - General maps (including distances between forts, hours of operation, and “you are here” indications)
 - Trolley stops including start/stop times and intervals
- Install bicycle racks at both forts
- Create printed materials, especially a guided walking tour, and make them available at the entrances
- Co-author a walking tour of the city, which includes the forts, with the publishers of *Qué Pasa!* or the Tourism Company of Puerto Rico
- Make the above information available on an external website for pre-visit planning
- Work with the municipality to improve pedestrian crossings near fort entrances, especially the two problem areas at San Cristóbal:
 - Crossing Norzagaray, at the stop sign preceding Muñoz Rivera
 - Crossing San Francisco, immediately following the merge from Muñoz Rivera
 - Crossing onto Plaza Colón from all four sides

- Add water fountains along the route
- Evaluate permits for street vendors to possibly offer mobile shade and cold beverages
- Increase visibility with law enforcement and interpretive staff walking the route

Taxi cabs

With fares to the airport starting at \$16 and the possible boon of a \$70-80 fare to El Yunque or Fajardo on the eastern side of the island, cab drivers in Old San Juan are under-motivated to serve the corridor between the two forts. Informal discussions with drivers also highlighted:

- high gas prices,
- lack of a waiting area/taxi stand at the forts or on Norzagaray,
- unlikelihood of getting a return fare (especially compared to the airport),
- frequent road closures and congestion, and
- too short of a distance — simply not lucrative.

The hotel provided taxi stands and main waiting area at Plaza Colón on Calle Tetuán offer drivers an area to clean their vehicles and wait without wasting costly gasoline. These areas also offer a social setting promoting camaraderie with other drivers. These assets make the alternative of cruising the congested streets for fares risky and simply less enjoyable.

The San Juan National Historic Site (SJNHS) provides parking at San Cristóbal. The first hour is free, enabling taxis to service the area. Most visitors spend under 40 minutes in the fort, so the risk of paying for parking is low and seldom enforced. SJNHS could further promote taxi use by offering curb cut outs or waiting areas in between the two forts. This is inadvisable, as the rampant illegal parking and lack of enforcement would become a greater managerial burden than what would be achieved by the increased mobility. Hoteliers claim that some of their guests with limited mobility (or large discretionary incomes) use taxis as a means to tour the entire city. Again, in this anomaly, taxi stands would not really help (since they would normally be starting

from a hotel) and would serve few patrons. Pragmatically, visitors seeking taxi-type service between the two forts would be better served by the Trolley or by an extension of El Paseo which is discussed later in chapter 7.

Trolley

The free Old San Juan Trolley (Trolley), introduced earlier in Chapter 2, is the only true non-tour mass transit available between the forts. The Trolley's frequency is every 15 minutes, and it operates daily between 6:30am and 10pm. The term frequency is used here over schedule, as the trolley is often delayed while caught in traffic. For the SJNHS, the trolley is the most unreliable when it is needed most—during peak travel times. Areas for improving Trolley service between the forts are very clear:

- Post signs at Trolley stops and include start/stop times and frequency
- Improve illegal parking enforcement where the Trolley's right-of-way is obstructed
- Display Trolley information at all fort entrances and on the external website
- Work with the municipality on evaluating narrower, more nimble vehicles
- Increase the radius of the roundabout at the foot of Calle del Morro by reducing the size of the center piece, moving the sign to the grass, and possibly shaving the outer edges of the bottleneck (discussed later in this chapter and shown in Photos 29 and 30)

Buses

Buses are the dominant mass transit mode in which visitors experience the forts. SJNHS fee collectors estimate that over half of the approximately 700,000 paying visitors arrive via bus. Additionally, countless numbers visit the exterior of the forts and the walls without paying, also via tour bus. It should be noted that the SJNHS is forced to support these uncounted visitors by maintaining the site, picking up trash, etc. In this case, bus companies reap the benefits of work done by the SJNHS and yet often find ways to avoid reciprocating, namely by helping their

customers avoid paying the nominal \$3 entrance fee per visitor. This capitalization has even manifested itself on the emblems and logos of the bus tour guides; for example, one of the larger bus tour companies – United Tour Guides – uses the outline of a bastion on their company logo which adorns all of their buses and business cards.

Since tour buses are simultaneously the most problematic and the most lucrative for the site, their mobility issues are paramount to the success of the SJNHS. More specifically, bus mobility issues fall into three categories: parking, the roundabout at El Morro, the Entrance/Exit at San Cristóbal, and the roundabout at El Morro.



Photo 20: Tour Buses Dominating the Parking Lot at San Cristóbal

Parking

Historically, three parking lots within the San Juan National Historic Site have, at various times, been open to the public: El Morro, the upper lot of San Cristóbal (above building 209), and the

lower lot of San Cristóbal (below building 213). The discussion on parking falls within the bus segment, as buses have the greatest demand and place the greatest strain on the parking infrastructure within the SJNHS.

El Morro is the signature fort within the site. Its position on the precipice of the Bay of San Juan and its dramatic cliff top views have made it an icon of Puerto Rico, seen on many local symbols and emblems. Previous to the early 1990's, a large parking lot existed on the grounds of El Morro (the Esplanade) and buses were allowed to drive to the door of the fort to drop off and pick up passengers. To preserve the environment and the historical context of the fortification, the parking lot and roadway were removed. The roadway has since been replaced by a narrower pedestrian-only walkway which also supports an insignificant amount of administrative golf cart type vehicles. Given the focus on preservation within the National Park System, this removal and reinstatement of the original context was a success and had been planned since the General Management Plan was published in 1984.



Photos 21 & 22: Vehicles Illegally Parked in Tour Bus Only Parking & Idle Police Officer

For tour drivers, this is not the case. The fort that visitors had heard about from friends or had seen pictures of in guidebooks was now $\frac{1}{4}$ of a mile further on an open walkway and with extremely limited local parking. Photo 27 shows a tour bus navigating the roundabout.

This specific vehicle stopped at the foot of the Esplanade, made a few interpretive comments, hesitated for riders to take a picture, and moved on to tour the city. This behavior is mimicked throughout the day. Further, tour buses often do not let riders disembark to take photographs, let alone stop for a short visit, given the length of the walk. This behavior is not entirely the driver's fault, as is shown in Photos 19 and 20; vehicles are constantly parked illegally in the Tour Bus Only zone, and just around the corner, a police officer sits idly.

Before the building of the fee collection center and additional administrative offices in building 213, the upper lot of San Cristóbal (above building 209), on Norzagaray, was the only visitor parking lot at San Cristóbal. This lot is quite small, as seen in Photo 23, and is now used as an administrative parking lot and for special events. Discussions with tour drivers revealed positive feedback from this change – the lot at building 213 is easily 5 times the size of the upper lot, and much easier to navigate. Photo 23 clearly illustrates the tight quarters of the upper lot.



Photo 23: Upper Parking Lot of San Cristóbal (above Building 209)

Improving the parking situation is a bit precarious. The current situation is likely better than any alternative. Minor changes and reasons for keeping the status quo include:

- Any improvement to bus parking at El Morro will be underutilized. Bus drivers have easy access to parking at San Cristóbal, and are able to drive right up to the entrance. New parking at El Morro would still necessitate visitors walking $\frac{1}{4}$ mile to and from the fort, and bus drivers would prefer to have visitors spend more of their time shopping or at other sites where merchants offer the drivers incentives to deliver customers. The lower lot at San Cristóbal has also given bus drivers the flexibility to avoid traffic-prone (and frequently closed) Norzagaray for alternative routes through the city.



Photo 24: School buses at Plaza Colón

The one exception is school buses. The peak season for tour buses is approximately November through May. When the tour season ends, summer school field trip season

begins, and the streets teem with school buses. School children generally tour El Morro and use the Esplanade to play on afterwards. The buses normally park in bus parking next to Plaza Colón, sometimes dropping children off at the roundabout at El Morro.

The biggest improvement here would be enforcement. If local police could be convinced to better manage the area next to Plaza Colón (seen in Photo 24) and the bus parking area and roundabout at El Morro (seen in Photos 21,22, and 25, respectively), congestion and overall hassle would be reduced.

- The upper lot at San Cristóbal is simply too small to be a visitor parking lot. Now used for administrative vehicles and as a staging area for special events, the SJNHS is probably maximizing use of this area, while providing excellent access for visitors and picture takers. This area would also provide a natural staging area/transit stop if a tram service is introduced between the forts.
- Although the lower lot (below Building 213, seen in Photo 20) has a somewhat counter intuitive entrance/exit, this is due to the shape of the fort. Bus companies volley between indifference and wanting small changes (like narrower spots for more vehicles, a wheelchair drop off area, etc.). This lot is very effective as is, and any changes to routing or spaces might detract from its current functionality.



Photos 25 & 26 Abrupt Sidewalk (with Obtrusive Planter) and Large Tree at San Cristóbal

One mild change here would be extending the sidewalk. Pedestrians, both arriving on foot and by tour bus, find themselves in a busy parking lot at San Cristóbal avoiding cars and buses and breathing diesel fumes. An extension of the current existing sidewalk (following the western wall of the parking lot), that currently ends abruptly (see Photo 25), would provide a clear, safe path and a respite for visitors to wait for others or their transportation. The traffic calming planter to the left of the sidewalk currently serves no purpose and should be removed to make the turn easier for entering vehicles.

Further, the area shaded by the large tree next to the existing sidewalk (see Photo 26) would make an excellent waiting area for bus drivers and waiting tourists.

Another more institutional change might include a maximum vehicle size at San Cristóbal. The layout of the fort and current visitorship suggest that vehicles larger than 25 passengers (25 - 30 feet) are not appropriate for this space. This decision is heavily dependent on administrative attitudes, visitorship levels, and enforcement.

Also falling under enforcement, the fee collection department at San Cristóbal used to maintain a part-time employee to manage the parking lot. Although during peak times this individual helped keep the lot running fluidly, during off-peak, there is very little work for this person. Further, since this individual is not a certified Park Ranger, tour bus drivers quickly realized that he/she could not issue tickets and the position's authority was undermined. Deciding on institutional changes, like maximum vehicle size and whether or not to create a position for a parking lot monitor, depends on the approach the SJNHS' administration would like to take to address this issue.

Roundabout at El Morro

Photo 27 illustrates a tour bus navigating the tight roundabout at El Morro. Given the lack of parking at El Morro, the roundabout serves two purposes:

- to offer a brief glimpse of the fort for *windshield tour* visitors, either in personal vehicles or in tour buses, and
- to allow larger vehicles to turn around (possibly dropping off passengers) and return westbound on Norzagaray, versus navigating the narrow streets surrounding the adjacent Plaza Beneficencia.



Photo 27: Tour Bus Navigating the Roundabout at El Morro

In addition to the turning tour bus, Photo 27 illustrates an illegally parked vehicle at the roundabout – a common occurrence here. Aside from better enforcement, the roundabout could be slightly modified to better accommodate tour buses and the heavy traffic on Norzagaray.

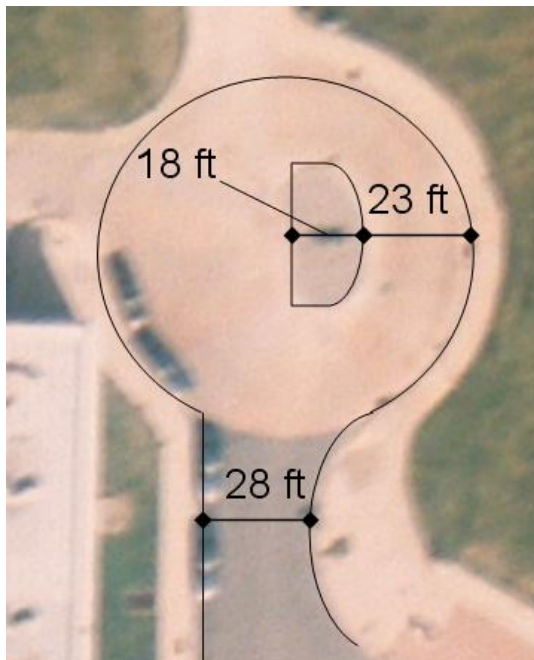
Photo 28 shows an aerial photograph of the area.

Photos 29 and 30 show the rough dimensions of the roundabout in feet and areas where existing concrete could be removed or shaved to offer a larger turning radius and passing space for two-way traffic. The simplest and quickest improvement would be to shrink or remove the center island which holds the National Park Service sign. The sign could be moved onto the adjacent sidewalk or grass. Complete removal of this island or a substantial decrease in its size would greatly improve the turning radius for vehicles navigating the roundabout.



Photo 28 Aerial Photograph of the Roundabout at El Morro

To better accommodate tour vehicles and traffic, the sidewalks at the entrance to the roundabout could be modified by shaving the edges, as roughly shown in Photo 30.



Photos 29 & 30 El Morro Roundabout – Dimensions and Proposed Areas for Removal (in Grey)

One possible problem with this suggestion is the SJNHS boundary line. The Army Corps of Engineers is slated to establish this boundary line, and it is possible that the site's boundary may end at the edge of the roundabout. If this is the case, shrinking the center island alone would still be a big improvement.

Another option would be a controlled access solution. Currently in 2004, the SJNHS is certifying bus tour drivers and guides. If this process is successful, one alternative would be to offer controlled access to an area just beyond the current roundabout. This would necessitate a double roundabout system: one roundabout for passenger vehicles, and then another, with controlled access, for buses to pick up and drop off passengers. Certified tour companies would be given remote controls to lift a gate for access. Such a system would require a more intrusive footprint on the Esplanade, as well as more rigorous management of the area and the guides. This option is far less preferable to using the current dedicated parking area and improving enforcement.

Entrance/Exit at San Cristóbal

Vehicles, predominantly tour buses, enter San Cristóbal via Avenue Muñoz Riviera. The fortification has a dedicated lane which merges with through-traffic. This lane is problematic, in that:

- vehicles attempt to exit the fort parking lot and immediately (and dangerously) cross three lanes of traffic,
- through-traffic on Avenue Muñoz Riviera misuses the dedicated lane by prematurely entering it to access the right turn onto Norzagaray, and
- tour buses, charter buses, taxis, and commercial vehicles illegally park in the lane, obstructing traffic and the entrance/exit of the fort.

The current signage is appropriate; if motorists obeyed the unbroken white line and did not illegally park in the lane or merge too hastily, the area would not be problematic. Local police do not reprimand motorists for these infractions, as they are under the assumption that the lane falls within the jurisdictional boundary of the fort and therefore should be policed by the Park Rangers. Like the roundabout at El Morro, it is unclear where the boundary of the SJNHS ends. Park Rangers are reluctant to enforce in this grey area. Since enforcement in this area may be a low priority (compared with other infractions like drug traffic on the site), a more substantial barrier should be considered to curb this issue, such as sturdy pylons following the current unbroken white line. Given the October 1, 2004 deadline for certification of bus tour providers, and that the providers' are constantly wielding the threat of blocking entrance to the fort, the barrier should, ideally, be in place before the deadline.



Photo 31: Traffic and Misuse of the Entrance/Exit Lane at San Cristóbal on Avenue Muñoz Rivera

Summary

Small changes will greatly improve mobility between the forts. Simple things like information access and drinking fountains would be great enhancements for pedestrians. Other structural

improvements, like adding a sidewalk to the parking lot at San Cristóbal or removing the center island at the roundabout at El Morro will also better facilitate movement between the forts without great cost or complexity. The more complex issue lies in the institutional barriers. If local police were more vigilant about enforcing problem areas, especially illegal parking, the SJNHS would not have to deal with many of the mobility challenges discussed in this chapter. Since the local police force is unlikely to consider much stricter enforcement, the site may be forced to take matters into its own hands with structural solutions, like pylons on Avenue Muñoz Riviera. In the long term, the SJHNS may want to consider removing itself and its mobility needs from the problems and mismanagement of the streets of Old San Juan by creating its own transit corridor. This longer term vision is discussed later in the chapter 7.

6. Calle del Morro

This chapter focuses on the ¼ mile road between the roundabout on Norzagaray – across the Esplanade – to the door of El Morro. In National Park Service documentation,



Photo 32: Esplanade Leading up to El Morro

this road is referred to as Trace Road and, more appropriately, Calle del Morro. Calle del Morro sits in the center of the Esplanade – a large grassy field of open space. As described previously, the historic relevance of this space is that it was originally created as indefensible area offering no cover to inland intruders attacking El Morro. Previous to the current pedestrian road, Calle del Morro used to be a full tree-lined motorized vehicle roadway, with automobiles and buses having access right up to the door of the fort. This previous installation definitely offered better mobility access to the fort. The trees offered shade to pedestrians and gave the area a more park-like atmosphere. Nonetheless, the trees and traffic detracted from the historical context, and the removal of both had been planned since the General Management Plan in 1984:

Remove all vehicles from the El Morro Esplanade and prohibit any new parking development within the historic site; (NPS — General Management Plan, 1984).

Following the destruction caused by hurricane Hugo in 1989, the San Juan National Historic Site removed the road, trees, and parking structure (shown in Photo 33). The entire area is now open grassy space, with the exception of a narrow pedestrian/electric vehicle path along Calle del Morro (shown in Photo 34). This removal has been bittersweet. The historical context has been restored, and the view of El Morro from the streets of Old San Juan is quite dramatic and beautiful. Both of these positives came at the cost of a reduction of mobility and access to the fort.

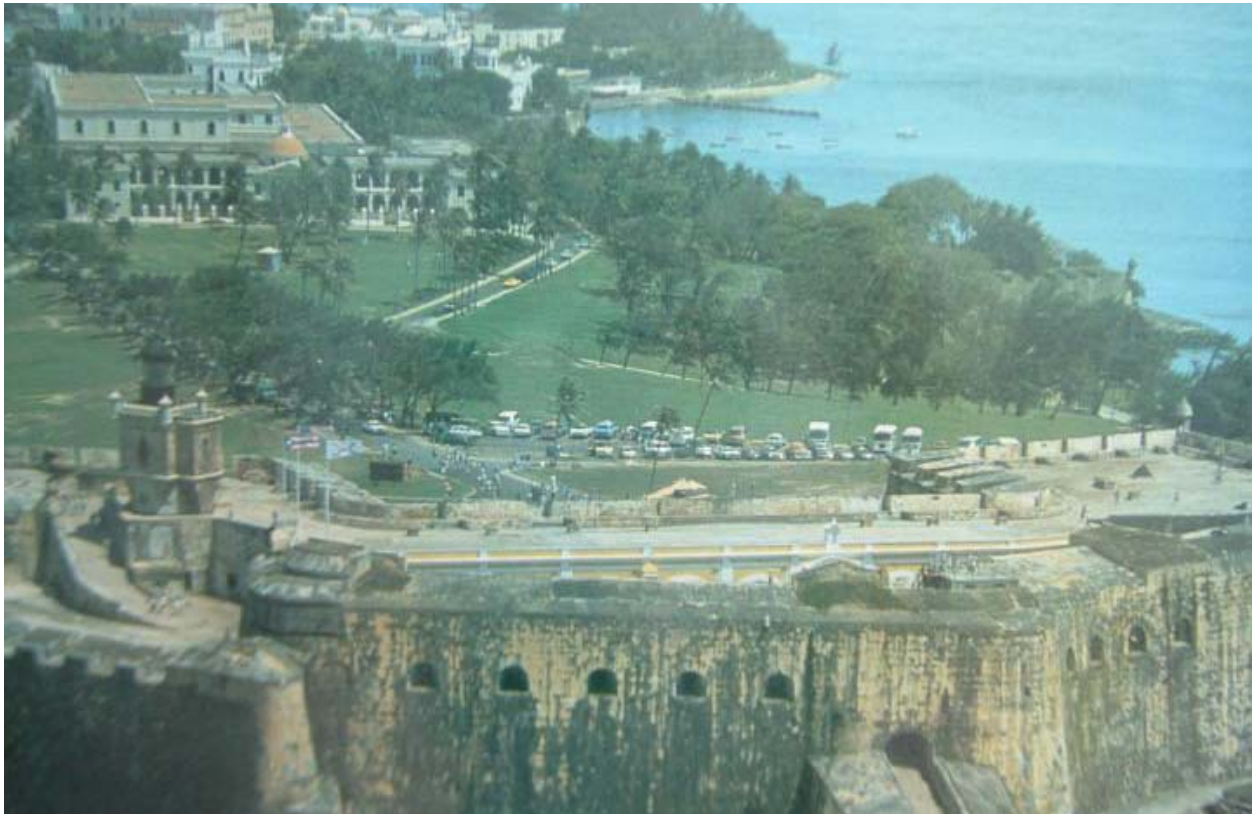


Photo 33: El Morro with Tree-lined Esplanade and Parking Lot before Removal in 1990

As mentioned previously, visitorship is trickling away from El Morro over to San Cristóbal, where parking is abundant and bus drivers can drop off passengers at the door of the fort. Visitors to El Morro must now walk the $\frac{1}{4}$ mile path from the roundabout on Norzagaray to the entrance gate. During the middle of the day, the walk can be quite grueling for visitors and especially for seniors and persons with disabilities. The open path leaves visitors without respite and exposed to the sun, humidity, tropical rain storms and strong trade winds coming off the ocean. While this inhospitable situation was ideal for the Spanish when they were defending the fort centuries ago, it is hardly welcoming for day-trippers who might be hoping to catch a bit of history between the shopping on Calle Cristos and returning to their cruise ship.



Photo 34: Pedestrian on Calle del Morro Heading toward El Morro

Recommendation

To improve mobility on Calle del Morro, there are two options:

- operate a tram which carries passengers between the roundabout at Norzagaray and the door of the fort, and
- include this need in a larger mobility solution which further integrates El Morro and San Cristóbal by building an extension to the existing El Paseo.

The El Paseo option is discussed at greater length in chapter 7. Although less preferable to integrating this need with an extension of El Paseo, providing tram service would certainly solve a simple mobility need on Calle del Morro, and the two major components of such a small system are vehicle type/fuels and operation.

Vehicle Type & Fuels

Calle del Morro heads uphill with a slight increase in slope towards the fort. This slope is not arduous, but any vehicle ascending the slope would need enough torque to pull a fairly heavy load. The TUG Tow Tractor discussed in Chapter 8 may be overkill, but its assets, make it a worthwhile choice, namely:

- clean alternative fuel use (electricity),
- quiet operation for interpretive opportunities,
- substantial torque at low speeds to ascend the slope and tow a load,
- maximum speed of 15mph to help govern hasty drivers,
- ubiquity of similar vehicles for parts and repair (such as at local airports),
- narrow profile to share the path with pedestrians, and
- built to last in inclement weather (e.g. airports in Siberia).

Surely other vehicles could fit this bill, and these attributes of the TUG Tow Tractor further act as a list of requirements for any vehicle choice for the route.

The TUG Tow Tractor and the current SJNHS fleet of administrative golf cart-type vehicles all use electricity as a fuel. The General Services Administration is pushing National Parks to use alternative fuels. Various alternative fuels have gained prominence over the past few decades, and currently propane is a common fuel for government fleet vehicles. This is due mostly to its availability (it's used domestically in water heaters, stoves, etc.) and because the conversion process of modern automobiles to propane is insubstantial. There has also been a strong recent lobby by the Propane Education and Research Council (PERC) in government markets.

Currently in the SJNHS, electricity would still be the preferable fuel to propane or any other alternative fuel. Refueling could continue to occur onsite, thus the SJNHS would: not be beholden to local distributors and price fluctuation, not add another refueling vehicle to the already congested roads of San Juan, still be able to operate the vehicles after a catastrophe (such

as a hurricane) due to the grid-independence of the site (including generators for power), and not need to deal with storage and maintenance of a hazardous material/fuel.

Operation

Given tight budgets and current demands on staff, the San Juan National Historic Site should not be in the business of the daily operation of such a tram. If the management feels a tram on Calle del Morro is preferable to another alternative, the site should write a request for proposal (RFP). Tour bus vendors especially should be targeted as potential vendors/concessionaires, as they: already have vast experience with visitors in the SJNHS, could possibly integrate the tram service with their tours, and might perceive such a service as cannibalizing their current tour offerings. The operators of the Trolley service have also expressed interest and would certainly be appropriately tooled to operate such a service. The RFP should ask potential concessionaires to submit details of their proposed offerings, including:

- vehicle type,
- fuel choice,
- vehicle overnight housing,
- vehicle maintenance,
- cost to the visitor,
- portion of revenues or fixed fee given to the SJNHS to maintain the roads, train the drivers for interpretation, etc.,
- frequency of service, and
- contingency planning – how the concessionaire would handle the service and deal with the vehicle(s) during a hurricane or other catastrophe.

To minimize the up front cost to a concessionaire, and to maintain greater control over the system, the SJNHS might consider purchasing the initial asset(s) of the tractor and trailer(s) and

contract just the service and maintenance of the vehicle(s). This relationship has successfully occurred in other National Parks, such as Zion and Yosemite.

Alternative

The tram solution on Calle del Morro would better serve visitors if it was integrated into improving mobility of the San Juan National Historic Site as a whole. A vehicle and concessionaire, with the characteristics above, could serve the mobility needs on Calle del Morro, as well as connecting the two forts and the San Juan Gate. An integration of these mobility needs is discussed in chapter 7 regarding the expansion of the existing El Paseo path.

7. El Paseo

Completed in 2000, El Paseo is a $\frac{3}{4}$ mile pedestrian path that begins at the San Juan Gate and extends to the tip of El Morro along the Bay of San Juan. At a cost of \$2.6 million, the path was funded by the Puerto Rico Tourism Company and built in conjunction with the San Juan National Historic Site. The path has since been designated as a National



Photo 35: El Paseo below the Walls of El Morro

Recreation Trail by the Department of the Interior. El Paseo connects with Paseo de la Princesa at the San Juan Gate, extending the pedestrian path another $\frac{1}{4}$ mile along the Bay of San Juan. This connection provides a corridor between the cruise ship piers and the tip of El Morro.

The path has been widely successful and is used by strollers, runners, history enthusiasts, tour operators, and others who come to simply enjoy the view.

Challenges

The single biggest challenge is lack of connectivity. The path stretches to the foot of El Morro and the mouth of the Bay of San Juan but stops there. Anyone reaching this point must turn around to exit; there is no access to the interior of the fort or the northwest corner of Old San Juan at the terminus of El Paseo.

Other challenges include:

- use of the path as a drug trafficking route to and from the neighborhood of La Perla,

- closure of the path due to high waves,
- feral cat proliferation due to food and water supplied by local animal lovers,
- the height of the walls, and their thickness (up to 15 feet), block the cooling wind and emit heat, making the path hot through the evening, and
- decay of materials, such as the steel bands in the concrete and light fixtures, due to exposure.

Although the ongoing management of El Paseo, like any recreational area, continues to encounter challenges, its construction and use today has made it a tremendous asset to the city of Old San Juan and the San Juan National Historic Site. During the three months of this study, extending El Paseo has emerged as the most ideal solution for both improving mobility throughout the site and enhancing access to the city of Old San Juan.

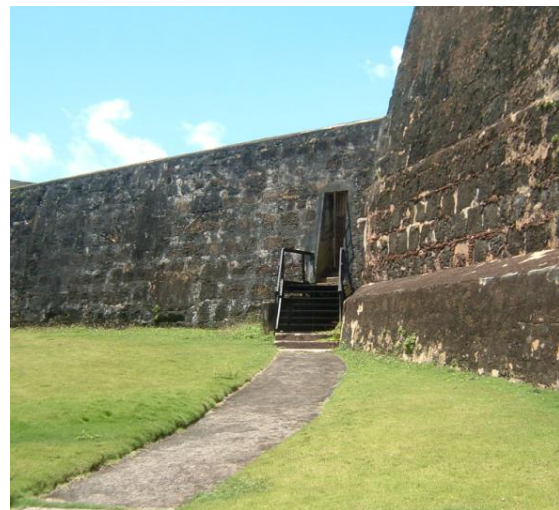
Immediate Improvements

As shown in the bottom right corner of Photo 35, the path terminates without access to El Morro or Old San Juan. Yet within 200 feet, a diagonal staircase (middle-left of Photo 35) leads to an entrance to the fort and further to an entrance to the dry moat.



Photo 35: Terminus of El Paseo and Staircase (middle left) Leading to El Morro

An initial step of extending El Paseo to this staircase would provide a through-path from Paseo de la Princesa (or, effectively, the cruise ship docks) to the entrance of El Morro. In addition to the staircase, natural entrances to the dry moat and the interior of the fort are already in existence, as shown in Photos 36 and 37, respectively.



Photos 36 & 37: Entrance to the Interior of El Morro & Entrance to the Dry Moat

Access to the dry moat is crucial, as it would offer visitors the option of exiting El Paseo and reaching the Esplanade (with access to the northwest corner of Old San Juan) or continuing into the fort and paying the fee. Current passive users of El Paseo, such as strollers and runners, should be able to continue to use the path without paying the daily entrance fee (especially after the park is closed in the evening). Paying visitors should also be given direct access to the front door of the fort. As an additional alternative, the entrance to the interior of the fort (shown in Photo 36) could act as a second fee collection



Photo 38: Path along Exterior Base of El Morro

area, if visitorship greatly increases over time. The area along the base of the fort has an existing path (shown in Photo 38) which would support visitors, and the entire corridor from the stairway to the entrance of the dry moat would only need some minor manicuring.

Long Term

In the long term, El Paseo should be considered as the one of the only ways for the San Juan National Historic Site to escape the recurring mobility challenges and gridlock in Old San Juan. The SJNHS is in a unique position, in that it has nearly total jurisdiction over the land bordering Old San Juan (with a few exceptions where wall portions fall under the boundary of the Commonwealth). The site has an opportunity to create its own mobility corridor which would both serve the specific forts of El Morro and San Cristóbal and the entire walled city of Old San Juan.

The SJNHS, as part of the National Park Service, presides over and maintains a 10 foot right-of-way adjacent to the 75 acres of fortifications in Old San Juan. Such land control offers the SJNHS relative eminent domain around the exterior of the city. This is a clear opportunity to create a mobility corridor which would be immune to the nuances of Old San Juan, such as illegal parking, and lack of enforcement. Additional possible benefits include, improving and enhancing:

- mobility between the forts,
- visitor experience,
- access to the fortifications,
- access for seniors and persons with disabilities,
- access to underutilized portions of the city (e.g. the beaches)
- new interpretive opportunities,
- access for maintenance, groundskeepers, and law enforcement,
- point-source pollution free transportation (both pedestrian and clean vehicle), and

- integration and promotion of economic vitality of the local communities (Old San Juan and La Perla).

Map 2 roughly shows the current path of El Paseo in yellow, with the connecting link to Paseo de la Princesa in blue. The red line shows the area that the proposed mobility corridor, or El Paseo extension, would serve.



Map 2: Old San Juan with Highlighted Paths (clockwise from bottom) Paseo de la Princesa, El Paseo, and Proposed El Paseo Extension Area

Specifics on suggested routes are outside the scope of this paper. As a baseline, the following five routes appear to be the clearest options. These routes are dictated by the two biggest logistical factors — the likely need to penetrate the wall and the steepness of the gradient leading up to San Cristóbal. Penetration of the wall fortification would result in the destruction a small portion of the site's resource. Fortunately, the fortification wall is a resource that is abundant. A small hole or tunnel would provide an excellent interpretive opportunity to emphasize the building materials and shear labor that went into the building of the fort. Beginning at the current terminus of El Paseo, the five options for routes include:

- through the dry moat, connecting to Calle del Morro, and traveling along Norzagaray (either on the street or on a path next to the street) to the upper parking lot of San Cristóbal,
- through the dry moat or cemetery and continuing along the interior of the fort wall (along Norzagaray) to the upper parking lot of San Cristóbal,
- around the cemetery and through the wall at the Instituto de Neurobiología and traveling along Norzagaray (either on the street or on a path next to the street) to the upper parking lot of San Cristóbal,
- following the exterior of the wall, through La Perla, with a tunnel at the basketball court ascending to the upper parking lot of San Cristóbal, and
- continuing along the coastline, passing La Perla and penetrating the wall adjacent to the San Tomás bastion and to the upper parking lot of San Cristóbal.

All of these routes should integrate multiple modes and the necessary space for their coexistence, including: walking, bicycling, and the tram service that is discussed in chapters 6 and 8.

Project Proposals: Polytechnic University of Puerto Rico

Designs for a few of the above routes have been explored by advanced students at the Polytechnic University of Puerto Rico. A class focusing on the landscape and architecture of historic places asked about 10 students to offer suggestions for extending El Paseo. The example in Photo 39, created by Cristina Salvesen, shows a possible path along the ocean, adjacent to the fortification.

By capitalizing on this skilled and yet inexpensive labor, the SJNHS could continue to harvest innovative ideas on how to improve the extension, such as by adding lookouts, an actuary, or museum, as are suggested by several students. This student project is continuing with similar advanced students today.



Photo 39: Student Concept of El Paseo Extension

Recommendations/Further Questions

SJNHS staff, university students, and local officials all concur that extension of El Paseo is an effective no-brainer. Given that the length of the extension will be at least double the length of the current path, a back-of-the-envelope calculation suggests that the SJNHS should expect to spend a minimum of \$6 million on such a project. Areas for further research and evaluation include:

- funding sources (grants, National Park Service allocations, cooperatives, etc.),
- resource and historical impact assessment (especially the fortification walls)
- collaborative partnerships (such as with the Puerto Rico Tourism Company and Polytechnic University of Puerto Rico)
- various paths and their steepness (gradients)
- environmental impact assessment (water runoff, vehicle use, etc.),
- potential vehicles for tram service,
- establishment of boundary lines around the fortifications, and

- concessionaire(s) assessment.

Although such a project would be one of the most substantial undertakings in the history of the SJNHS, especially considering a very rough minimum cost estimate of \$6 million (the 2004 annual budget for the site is just over \$2.5 million), it is surely a worthwhile enterprise.

Extension of El Paseo would drastically improve mobility and enhance visitor experience at the San Juan National Historic Site.

8. Case Study – Alcatraz

Alcatraz was originally built as a fortress to protect the San Francisco Bay during the gold rush in the 1850's. Long delays in building, the Civil War, and defunct cannons all led to the fort never firing a single shot in defense during the 80 years it was administered by the U.S. military.



Photo 40: Alcatraz Island

The military did use the fort as a disciplinary barracks (especially for deserters), and this eventually led to the Department of Justice acquiring the site in 1934 to use it as a civilian prison. Although Alcatraz has no fresh water or access to the electricity grid from San Francisco, the Bureau of Prisons felt it was an excellent site to establish a prison within the prison system – a place where troublemakers from other prisons would be sent as the ultimate punishment. Alcatraz was closed as a prison in 1963, due to many factors, but mainly to the tremendous cost of running and maintaining the site. The island was almost vacant for several years, and then in 1969 was occupied by Native Americans for a year and a half. The Native Americans were the first to bring visitors and tourists to the site, and this triggered ideas to convert the land into a protected tourist destination. Following their occupation, Congress created the Golden Gate National Recreation Area in 1972, and Alcatraz was included in this designation. Today, over 1.3 million people visit *The Rock* each year.

Table 3: Alcatraz Statistics

Geographic area ¹	22 acres
Number of paid visits in 2003 ²	~1,300,000
Number of recreational visitors to the entire Golden Gate National Recreation Area in 2003 ³	13,854,750
1-3. NPS, 2004	

Relevance to the San Juan National Historic Site (SJNHS)

Alcatraz was chosen as a case study due to its many similarities to the SJNHS. More specifically, Alcatraz' similarities include:

- location at the entrance of a bay,
- a tremendous amount of labor required to initially build the site,
- a further massive effort to maintain the site,
- over a million annual visitors,
- exposure to the decaying forces of wind, sea, and salt air,
- ramifications of these forces such as a very short vehicle life on the site,
- steep grades,
- inclement weather for visitors,
- high visitorship by seniors and persons with disabilities,
- a National Park site abutting an urban area, and
- visitors coming to the site as part of a larger trip to visit the city (San Francisco) and its surrounding attractions.

Visitorship

The concessionaire, or vendor, which serves Alcatraz on contract from the National Park Service is the Blue & Gold Fleet (Fleet). The Fleet provides over a dozen roundtrips a day, via ferry, to the site. The Fleet's service to Alcatraz complements their other Bay boat tours, and they maximize efficiencies on maintenance and operational costs (for example, tickets to Alcatraz are sold from the same window that Bay Tour tickets are sold (including internet and phone orders), and both tours use the same boats).

Alcatraz sits near the middle of the entrance to the San Francisco Bay, about 1 ½ miles from Fisherman's Wharf. The boat trip to/from the site takes 10 minutes, and the average visit lasts 2

½ hours. Upon reaching the dock at Alcatraz, visitors must climb a 12% grade to reach the prison entrance, often in foggy, windy, and/or rainy weather. Once inside the prison, visitors must further navigate the hallways and stairways in and around the site. The first portion of the visit, the steep grade, used to be especially troublesome for seniors, persons with disabilities, and other visitors with special mobility needs.

Rich Weideman, the current Chief of Public Affairs for Golden Gate National Recreation Area, was one of the leaders in deciding to address the problem of these visitors with special needs by researching a shuttle service between the dock at Alcatraz, up the steep grade, and to the entrance. Weideman conducted cursory research which indicated that an average of 7% of all visitors at U.S. tourist destinations have special mobility needs. By polling the Blue and Gold Fleet and the Park Service staff, he found Alcatraz visitorship to be consistent, if not higher, with this 7% national average. To address this need, the Park Service hoped to find a vehicle which would fulfill the following requirements:

- quiet motor, so as not to drone out interpreters or disturb wildlife,
- narrow footprint to move alongside walking visitors,
- powerful enough to tow a load up the steep grade,
- support for wheelchairs, and
- clean fuel/energy source that could be supported on the island.

Of these five main requirements, finding a vehicle that could climb up the steep grade was the toughest. Golden Gate National Recreation Area (GGNRA) uses GEM, TH!NK, and Club Car electric vehicles for maintenance and administrative access throughout the site. The biggest advantage to the TH!NKs (like the GEMs used at the SJNHS) is their ability to drive on city streets (due to compliant seatbelts, taillights, etc.), but they are underpowered to tow a load up a steep grade and are simply not durable enough to withstand the harsh salt air. Serendipitously, GGNRA discovered the use of TUG Tow Tractors at the 1996 Atlanta Olympic Games. TUG vehicles are used primarily to tow airplanes and baggage at airports across the globe. At the Olympic Games, the vehicles were used to transport athletes and VIPs around the Olympic

Village. One of the vehicles used in the Olympic Games was then donated to Alcatraz and has since become a key ingredient to the SEAT system (Weideman, 2004).

SEAT (Sustainable Easy Access Transport) System

TUG Tow Tractor

Serving airports from Siberia to the Tropics, TUG Tow Tractors are ideally suited to haul heavy loads in extreme weather conditions. The electric motors also mean quiet operation and zero point-source pollution.



Photo 41: Tug Tow Tractor and Trailer at Alcatraz

Although the vehicle was effective off-the-shelf, GGNRA made a few small modifications to adapt the vehicle and system to Alcatraz' SEAT system:

- solid rubber tires to minimize wear and tear and improve turning performance,
- backup 'beeper' horn for safety,
- improved electricity generating reverse braking system, and
- conversion of one electrical outlet to 440V.

Other than these small changes, the vehicle has been a complete home run. It's narrow body footprint of 4 ½ feet by 10 ½ feet allow it to navigate the zigzagging path as well as share the road with pedestrians. The vehicle has a maximum speed of 15mph. Given its high torque level at low speeds (it was built to tow airplanes on wet tarmacs), it has no difficulty climbing the grade or maintaining traction in rainy weather. The reverse braking system recaptures electricity when descending hills. This feature is used on other electric and hybrid electric vehicles including the controversial Segway™. The 440V conversion is probably the most complicated piece of the implementation. Given the alternative of transporting a combustible fuel to the island, storing it, and the Park Service's desire to promote *sustainability*, this conversion and the use of electricity as a clean fuel became the clear choice.

Taylor Dunn Trailers & Wheelchair Access

To complete the SEAT system, Taylor Dunn Trailers (trailers) were selected as the trailers to be towed behind the TUG vehicle. These trailers are used nationwide in theme parks, and have a similar narrow footprint to the TUG vehicle – 4 ½ feet wide by 13 feet long.



Photo 42: Taylor Dunn Trailer with 16 Seats

Since the GGNRA's main goal with the SEAT system was to enhance service to seniors, persons with disabilities, or anyone with special needs, the trailers used specifically for wheelchair access were customized by raising the roofs and ordering the trailers without the two center bench seats. The off-the-shelf product comes with four rows of four bench seats (shown in Photo 25) thus offering seating for 16. This removal provides seating for 10 – 8 seats plus two wheelchairs. The building of the ramp has been troublesome, and the version pictured in Photos 26 and 27 is the third version. GGNRA considered building permanent concrete loading ramps at the stops to expedite boarding and omit the ongoing ramp engineering process, but this was infeasible due to the necessity of maintaining the historic context. Such cumbersome on-vehicle ramps versus permanent concrete ones should both be evaluated if a similar system is implemented at the SJNHS.

Riders on the SEAT system are first-come first-served and are self selected. The operator does not question one person's need over another. Although the SEAT trolley is often full, it departs hourly to drop off and pick up remaining riders, so capacity does not appear to be an issue.



Photo 43: Taylor Dunn Trailer with Stored Wheelchair Ramp



Photo 44: Taylor Dunn Trailer with Extended Wheelchair Ramp

Up to 6 trailers can be towed for a maximum capacity of 84 riders (4 trailers of 16 and 2 trailers of 10 (8 people plus 2 wheelchairs)). Currently, the system serves somewhere between 50 and 70 thousand visitors annually. The trailers are not nearly as durable as the TUG Tractor Trailer and require frequent painting and maintenance. The trailers do have the benefit of a two axes system, giving the tractor and line of trailers a tight turning radius. Therefore, even the last trailer in line follows the same path as the head tow motor very closely. The Park Service would prefer to find a more durable trailer that offers a version with seats and another with an original equipment manufactured (OEM) wheelchair ramp.

Application to San Juan National Historic Site

The similarities between Alcatraz and the San Juan National Historic Site (SJNHS) make the SEAT system an attractive solution for the SJNHS. Not only has Alcatraz acted as a guinea pig for the system, their growing pains have resulted in excellent learnings for a similar system in San Juan. In chapter 7, an extension to El Paseo was discussed which would offer travel between the forts by connecting the San Juan Gate, El Morro, and San Cristóbal. If such an

extension is desirable, or if additional mobility is warranted on the existing portion of El Paseo, a similar SEAT system would be an excellent candidate for enhancing overall mobility, especially for seniors and persons with disabilities.

Aside from the few customizations of: new tires, a 440V electrical outlet, a reverse ‘beeper’ horn, raising the roof, and building a wheelchair ramp, the system seems directly applicable to the San Juan National Historic Site. The major advantages include:

- TUG vehicles are widely available with inexpensive OEM replacement parts and (presumably) service centers at major airports,
- TUG vehicles are very durable and can tolerate extreme weather conditions,
- TUG vehicles provide the necessary high torque at low speeds that would be necessary to navigate the hills at SJNHS and around Old San Juan,
- the heavier TUG vehicle should not have a problem with traction on wet surfaces, especially the cobblestones in Old San Juan,
- the electric motor is quiet and will not interfere with interpretation,
- electricity is a clean fuel source — it will not create point-source pollution which erodes the walls of the forts and pollutes the air and water,
- the tractor and the trailer have a sufficiently narrow footprint to navigate the current portion of El Paseo and the roads around the fort,
- service can be expanded by adding trailers without adding additional drivers, and
- ADA compliant.

9. Further Recommendations

This report has attempted to survey existing transportation modes and provide suggestions for improvements for the San Juan National Historic Site (SJNHS) and, in some cases, the greater area of Old San Juan. This work also appends the previous analyses done by the Federal Transit Authority and J.J. Sosa and Associates. Although more detailed recommendations are discussed in each chapter, general suggestions are offered here to better assist the SJNHS in having a high level action plan to improve mobility.

Accurate Visitor Counts

Establishing an accurate visitor count may appear unrelated to a transportation mobility study, but making this number more accurately reflect true visitorship would allow the site to more precisely plan for the impacts on the resource. Stated previously, the Park Service estimates visitorship at the SJNHS to be over 1.2 million visitors, roughly separated between 700,000 paying visitors and 500,000 passive recreators. SJNHS staff feels that this figure is low for several reasons.

After the park gates close at night, tour companies continue to pick up tourists, usually from the late-arrival cruise ships, and take them on twilight tours of the forts and the city of Old San Juan. This behavior is duplicated by other providers, including the taxis that service the hotels. For these after-hours visitors, the SJNHS must maintain the grounds, pick up trash, pay for electricity to keep the forts illuminated and safe, provide ranger service, and countless other details. Yet the site is not compensated for providing this service. Conversely, tour providers and taxis make the same amount of money per patron, whether those patrons pay to enter the SJNHS or not.

Adding to these structured tours, thousands of locals flock to the grounds of El Morro, or Esplanade, to picnic, fly kites, and relax on weekends. Given that the Esplanade is an oasis of open green space along the coast in a very dense urban setting, it acts as a magnet for those

wanting to escape the concrete and incessant horns of the city. Finally, innumerable others stroll along the 75 acres of the fortification, walk along El Paseo, or sit for a moment atop one of the walls that surround the city. The SJNHS is charged with servicing all of these types of visitors, by providing and maintaining both a tourist destination and local recreational facility for Old San Juan. Given the vastness of this task, it is crucial that an accurate count of users of the site be obtained. A more accurate count would better provide the site with statistics to plan, budget, and adaptively manage its visitorship. The current number of 500,000 is based on a formula of a percentage of paid visitors. SJNHS staff believes this number to be too low (considering all of the applications of the site listed above), and their observation rings true.

A new more comprehensive count and estimation of visitorship must be conducted to enhance the administration of the site. An accurate number would also offer better estimations of mobility demands on the site and how the site should plan for new developments, such as an extension of El Paseo.

Enforcement

Many of the problems discussed in this mobility study are due to lack of enforcement in and around the SJNHS and Old San Juan. Lack of enforcement regarding illegal parking is especially troublesome throughout the site, as it snowballs into creating gridlock and inhibiting access. Stricter and more frequent enforcement of illegal parking alone would greatly improve mobility within the site without the high cost of building infrastructure to thwart this and other troublesome behaviors.

Cooperative Ventures

Given the sparse amount of staff at the SJNHS, cooperative ventures may provide an avenue to extend the work and presence of the site. For example, the site should consider partnering with

the Puerto Rico National Parks Company to enhance access at El Cañuelo. Additionally, given that roughly half of the visitors to the SJNHS arrive via cruise ship, the site should also consider partnering with the larger cruise lines to deliver information about the fortifications in conjunction with the cruise lines' in-cabin brochures and/or partner in a similar capacity with the Tourism Company of Puerto Rico who provides other brochures to tourists at La Casita and two other offices in Old San Juan. In both of these instances, the site could access a large audience with a minimum amount of labor.

Municipality

The recent road closure on Norzagaray has resulted in a suspension of Trolley service on this route. Although this issue falls under the jurisdiction of the municipality of Old San Juan, the closure and Trolley service suspension inhibit access to the San Juan National Historic Site. In this situation and others, the fates of the municipality and the site are intertwined. Countless examples of this situation abound. Every taxi in Old San Juan bears the symbol of a sentry box representing the fortifications at the SJNHS, and yet there are no signs on the thoroughfares and freeways leading to into Old San Juan to indicate how to get to the site. By promoting a better working relationship with the municipality, the San Juan National Historic Site may be able to form a united front on issues which interest and impact both entities, including recent interest in establishing the entire city of Old San Juan as an UNESCO World Heritage Site.

Appendix A: Resources

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